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ABSTRACT

To learn more about the motivational factors of adult learners, data were collected regarding the instructional motivation perceptions of adults in a variety of learning environments. Subjects in the first phase of the study were a mixture of 183 graduate and undergraduate students enrolled in credit and noncredit education courses of 4 medium-sized state universities. Subjects in the second phase were 147 students enrolled in community adult education classes in a suburb of a large midwestern city. Phase 1 subjects were administered the Course Interest Survey Revised (CISR) and the Course Effort Survey Revised (CESR); phase 2 students were administered the CISR only. Data analyses included means and standard deviations for each test item. Additional analyses included orthogonal transformation solution-varimax factor analysis. Results showed some support for Keller's ARCS (attention, relevance, confidence, and satisfaction) Model for Design of Motivating Instruction. Adults in university courses and workshops were found to have much different instructional needs than adults in community workshop classes. The responses of the subjects in community classes provided less support for Keller's work. (Contains 17 references.) (KRN)

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ED 362 152

Title:

Factor Analyses of the Instructional Motivation Needs of Adult Learners

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FACTOR ANALYSES OF THE INSTRUCTIONAL M OTIVATION NEEDS OF ADULT LEARNERS

Previous research suggests that motivation is related to interest and effort and that for some learners satisfaction is closely related to ones overall interest in an instructional environment. In order to learn more about the motivational factors of adult learners, data were collected regarding the instructional motivation perceptions of adults in a variety of learning environments. Factor analyses of these data provide for some support for the categories of the ARCS Model for Design of Motivating Instruction. Adults in university courses and workshops were found to have much different instructional needs than adults in community workshop classes. The responses of the subjects in community classes provided less support for the categories of Keller's work. The results, analyses, and implications are discussed.

A number of researchers (Aslanian & Brickel, 1980; Cross, 1981; Houle, 1961; Knowles, 1980; Zemke & Zemke, 1981) have in the past proposed that adult learners have very specific motivational needs in instructional settings. These needs may be the result of life experiences (Knowles, 1980), transitions in life (Cross, 1981), or learned attitudes over time as a major factor in adult learning (Wlodkowski, 1985). As a result, these authors recommend that instruction for adult learners be designed differently than other types of instruction.

More recently Galbraith (1990 & 1991) has built on this theory base, hypothesizing that facilitators and adult learners ought to be engaged in active, challenging, collaborative, critically reflective, and transforming educational encounters into a transactional process. The guiding principals focus on (a) an appropriate philosophical orientation; (b) the diversity of adult learners; (c) a conducive psychosocial climate; (d) the need for challenging interactions; (e) the promoting critical reflection; and (f) the encouragement of independence.

While the literature is rich with material about the needs of adult learners, there appears to be almost no evidence of actual research findings aimed at the identification of the instructional motivation needs of adults. Recently, Bohlin, and Viechnicki (1991) found that for a group of college students, motivation had two distinct components interest and effort. The analyses of their data also suggested some preliminary support for the categories of the ARCS Model for Design of Motivating Instruction -- attention, relevance, confidence, and satisfaction. The purpose of this study therefore was to investigate the primary factors of motivation for adults of various types in instructional environments.

MOTIVATIONAL INSTRUCTIONAL DESIGN

Instructional motivation attracts learners toward the instruction and increases their effort in relation to the subject (Keller, 1983). This means that instructional

motivation has two components, it is interesting and effort generating. Motivational instruction, therefore, has appeal or interest for the learner and stimulates learner effort. This dual characteristic of instructional motivation has been supported in previous studies (Bohlin, Milheim, & Viechnicki, 1990a & b).

Keller (1987), Keller and Suzuki (1988), and Keller and Kopp (1987) also identify four categories of motivation in learning situations: attention, relevance, confidence, and satisfaction (ARCS). To facilitate continuing motivation, strategies in these four categories should be addressed. The ARCS model contains specific methods or strategies, that are aimed at producing motivational outcomes, when learners are lacking sufficient conditions, such as interest or motives. The initials of these four categories (attention, relevance, confidence, and satisfaction) give Keller's model the acronym ARCS.

The initial requirement for motivating instruction is to gain and maintain the *attention* of the learner. This can be achieved through procedures that take advantage of the curiosity, interest, or arousal of the students by using humor, variety, enthusiasm, etc. Second, the instruction must have perceived *relevance* to the immediate or long-range personal needs of the learner. These personal needs can be met by matching the instruction to learners' goals, making the benefits clear, keeping the challenge level appropriate, etc. Next the instruction must provide for the *confidence* of the learner. The instruction must promote the learner's expectancy for success or failure, which influences the actual effort and performance, and can be increased by strategies such as clearly indicating the requirements for success, providing a low risk environment, and giving accurate attributional feedback. Lastly, the instruction should provide individual *satisfaction* in order to facilitate continuing motivation. Learners must perceive the rewards gained as fair, equitable, and consistent while meeting their expectations. Learner satisfaction can be promoted by providing appropriate recognition for success, giving informative and corrective feedback, etc.

These strategies and categories were the basis for the development of two needs assessment instruments. The instruments, emphasizing *interest* and *effort* , were used in this study. The research questions are (a) What are the primary motivational factors for adults in instructional settings? (b) Are these factors different for adult college students and adults from the general population? (c) How do these students' needs differ in regards to interest and to effort?

METHODOLOGY

Instruments

The instruments used in this study were the Course Interest Survey Revised (CISR) and the Course Effort Survey Revised (CESR). These instruments were developed through a series of revisions (Bohlin, Milheim, & Viechnicki, 1990a; Bohlin, Milheim, & Viechnicki, 1990b; and Viechnicki, Bohlin, & Milheim, 1990). The original instrument was developed by Keller and Subhiyah (1987) to evaluate the percieved degree of motivational effects of instructional materials. After rewording the items and deleting those items not consistent with evaluation of classroom instruction, several items were added which were identified in the

literature as specifically important to the instructional motivation of older learners.

The purpose of these instruments is to identify the instructional motivation needs of learners. Each instrument is composed of the same 42 items, which are a selection of strategies which have been identified in the literature as having motivational effects on learners of various ages (See Table 1). The instruments only differ in asking the subjects to rate the importance of each (of the 42 strategies) on their own *interest* and *effort* , respectively.

The instruments might be used to determine the motivational needs of specific individuals or of specific classes. They also can be used to measure the needs of a representative group of a population with the intent of obtaining generalizable prescriptions for that population.

Subjects

The subjects in Phase 1 of this study were a mixture of 183 graduate and undergraduate students enrolled in credit and non-credit classes at four medium-sized state universities across the U.S. These classes were offered through Colleges of Education, and represented a variety by content and methods of delivery. The average age of the subjects in this sample was 38 years. Fifty-seven percent of the subjects were female. These students responded to the CISR and the CESR.

The subjects in Phase 2 of this study were 147 students enrolled in community adult education classes in a suburb of a large midwestern city. These classes represented a wide variety by content and methods of delivery. The average age of the subjects in this sample was 46 years. Fifty-one percent of the subjects were female. These subjects were only given the CISR.

While return rates were approximately 96% for phase 1 and 86% for phase 2, an additional 6% and 3%, respectively, of the returned response sheets were discarded due to incomplete or out of range responses.

Analyses

The instruments were administered during regular class time and collected. Responses were made on scan sheets. Sheets were either scanned or hand entered to make the responses available for analysis. Data were analyzed using *Statview 512+* on a Macintosh LC computer. Analyses included means and standard deviations for each of the items. Comparisons of the means identified those items that were rated as most important to the subjects' interest and effort in instructional settings.

Additional analyses included orthogonal transformation solution-varimax factor analysis. These analyses were performed in order gain some insight into the nature of the response patterns of the subjects and to examine the degree of support for the ARCS model as identifiable categories.

RESULTS

Phase 1 - College students

Analyses of the responses to the items showed that the strategies were ranked highly by the subjects. Several were rated very highly by subjects on both sets of

instruments. Others were rated relatively high on only one of the instruments. A listing of those highly rated items (the letter and number identify the subscale and subscale item number) for each of the instruments follows.

Strategies reported as most important to the subjects' **interest** (in order of reported importance):

C6 Requirements for success are made clear to me
R1 Information I learn will be useful to me
R3 Benefit from the knowledge acquired in the class
S9 Feel satisfied with what I learn
A1 Makes me feel enthusiastic about subject
C9 Get enough timely feedback to know how well I am doing
S8 Amount of work I have to do is appropriate
C10 Instructor models and demonstrates proper skills during instruction
R12 Personally benefit from what I learn in the class

Strategies reported as most important to the subjects' **effort** (in order of reported importance):

C6 Requirements for success are made clear to me
R1 Information I learn will be useful to me
R3 Benefit from the knowledge acquired in the class
S2 Can set and achieve high standards of excellence
A1 Makes me feel enthusiastic about subject
S8 Amount of work I have to do is appropriate
C9 Get enough timely feedback to know how well I am doing
C4 Whether or not I succeed is up to me

The three highest ratings by the subjects in this phase were the same (in order) for both instruments: (a) clearly stated requirements for success, (b) learning of personally useful information, and (c) knowledge acquired is beneficial. Three other items were ranked highly on both instruments: (a) makes me feel enthusiastic about subject; (b) get enough timely feedback to know how well I am doing; and (c) amount of work I have to do is appropriate

Results of the factor analyses showed that for the CESR the first four factors were principally the four categories of strategies proposed by the ARCS model--- Confidence, Relevance, Attention, and Satisfaction, respectively (See Table 5). For the CISR, results were less definite. Further analysis, showed that removal of the Satisfaction category items from the data before performing the factor analysis resulted in a very clean separation of items from the other categories into the first three factors of Confidence, Relevance, and Attention, respectively (See Table 6).

Phase 2 - Community education students

Analysis of the items showed that most items were rated very high on the CISR by these subjects (the CESR was not administered to this population). The responses showed a pattern of higher ratings than the college students on nearly every item. A ceiling effect may have effected these data, as many items had means within one standard deviation of the highest possible rating. A listing of the items most highly rated (the letter and number identify the subscale and subscale item number) follows:

Strategies reported as most important to the subjects' **interest** (in order of reported importance):

S1 Gives me a lot of satisfaction
R11 Content relates to my expectations and goals
C10 Instructor models and demonstrates proper skills during instruction
C5 Creates a relaxed classroom atmosphere
C4 Whether or not I succeed is up to me
C3 Builds my self-esteem
R12 Personally benefit from what I learn in the class
C2 Makes me feel I have the ability to succeed
R1 Information I learn will be useful to me

Results of the factor analyses showed that for the CISR, the factors were mixed. Further analysis, with these responses showed that removal of the Satisfaction category items from the data before performing the factor analysis resulted in a better placement of items, but the factors were not as "pure" as expected (See Table 6).

DISCUSSION

All 42 of the strategies in the instruments received mean responses by all of the subjects in the range of important to necessary to their interest or effort in instructional settings. While both scales shared some of their highest rated items for college students, six of the top nine, there were definite differences in the results of the factor analyses between the two instruments and between the two groups.

The results of the first factor analysis (of the effort responses of learners in college classes) gave some support to the categories of the ARCS model with the each of the first four factors entirely or predominately composed of items from one category each -- Confidence, Relevance, Attention, and Satisfaction respectively (See Table 6). This suggests that the theoretical nature of the categories in the ARCS model are consistent with the nature of the self-reported motivational needs of adults in college courses and workshops. This also supports the traditional type of definition of motivation which usually refers to time on task or some other measure of effort.

The results of the second factor analysis (of the interest responses of learners in college classes) gave factors that were highly mixed. Repeating the factor analysis after removing the Satisfaction items yielded a very good separation of category items into the first three factors -- Confidence, Relevance, and Attention (See Table 5). This suggests that when considering learners' interest, satisfaction may be intimately interrelated with the other categories' strategies. Another explanation might be that these learners find it difficult to differentiate the effects of satisfaction-oriented strategies from others when referring to their own interests.

The fact that the top three responses to both instruments were the same may suggest that instructional strategies perceived as the most important for interest are also important for effort. An alternative explanation is that for very important strategies, subjects have difficulty differentiating between the effects of interest and effort.

A comparison of the highest rated items on the CISR for the two different groups show striking differences. The adults in the community education workshops rated nearly all of the items as much more important. This supports that hypothesis these adults from the general population have much lower levels of intrinsic motivation in classes, and feel a greater need for extrinsic motivation. In addition, these learners report a greater need for confidence-building strategies -- five of the top nine items were from the category of confidence. This suggests that the lower intrinsic motivation of theses learners may be related to lower level of confidence in their ability to succeed in a formal learning environment.

The omission of attention-related strategies from the highest rated items for the non-college adults, can be explained by the fact that they are taking classes that are completely optional, ones that they have probably selected because of a strong interest in the topic. They therefore would not need strategies intended to hold their attention, in spite of reported shorter attention spans for older adults. This is further supported by the fact that the second highest item for this group was that the "content relates to my expectations." Their interest is in fact very dependent upon how closely the content matches their expectations when enrolling in the class. The uniquely high ranking of the confidence item that referred to building the learners' self-esteem was noteworthy. It would seem that adults from the general population, have lower self-esteem and therefore have a greater need for instructor facilitation in this regard.

The three highest-rated items for the adults in the college classes were not among the highest rated items for the other group. The first, that the requirements for success are clear, is probably related to grades and their importance to that group. The second, that information will be useful, and the third, that they benefit from the knowledge obtained in the class, reflect on the usual relevance of college courses to students' occupations.

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Table 1

Content of items in both the Course Interest Survey Revised (CISR) and the Course Effort Survey Revised (CESR) by subscales

Attention:	1	Makes me feel enthusiastic about subject
	2	Content captures my attention
	3	Makes the subject matter seem important
	4	Shows how the content relates to things I already know
	5	Uses humor during instruction
	6	Makes me feel curious about the subject matter
	7	Does unusual or surprising things that are interesting
	8	Uses an interesting variety of teaching techniques
	9	Curiosity is often stimulated by the questions asked or the problems given
Relevance:	1	Information I learn will be useful to me
	2	Allows time for practical application of the content
	3	Benefit from the knowledge acquired in the class
	4	Actively participate in the class
	5	Positive role models be presented to me in class
	6	Is flexible to meet my needs in content and assignments
	7	Personal benefits of the course are made clear to me
	8	Challenge level is about right
	9	Have some input or choice in content and assignments
	10	Get a chance to work with other people in the class
	11	Content relates to my expectations and goals
	12	Personally benefit from what I learn in the class
Confidence:	1	Helps me feel confident that I can do well
	2	Makes me feel I have the ability to succeed
	3	Builds my self-esteem
	4	Whether or not I succeed is up to me
	5	Creates a relaxed classroom atmosphere
	6	Requirements for success are made clear to me
	7	Frequent opportunities to succeed
	8	Helps me to believe I can succeed if I try hard enough
	9	Get enough timely feedback to know how well I am doing
	10	Instructor models and demonstrates proper skills during instruction
	11	Non-threatening
	12	Designed so that everyone can succeed
Satisfaction:	1	Gives me a lot of satisfaction
	2	Can set and achieve high standards of excellence
	3	Fair recognition compared to other students
	4	Instructor's evaluations of my work match how well I think I have done
	5	Helps me to accomplish my own personal goals
	6	Feel satisfied with how the class is run
	7	Get enough recognition for my work through feedback
	8	Amount of work I have to do is appropriate
	9	Feel satisfied with what I learn

Table 2

Means and standard deviations of responses to each item in subscales in the Course Interest Survey Revised (CISR) *by students enrolled in college courses or workshops*

Sequence Number	Attention	Relevance	Confidence	Satisfaction
1	**1.95 (.87)**	**1.80 (.80)**	2.29 (.99)	2.37 (.89)
2	2.06 (.82)	2.09 (.94)	2.30 (1.02)	2.22 (.89)
3	2.12 (.80)	**1.91 (.78)**	2.76 (1.08)	2.52 (.97)
4	2.31 (.83)	2.92 (1.06)	2.24 (1.08)	2.23 (.82)
5	2.68 (1.10)	2.91 (1.13)	2.32 (.95)	2.93 (1.03)
6	2.29 (.85)	2.47 (1.08)	**1.75 (.81)**	2.55 (.89)
7	3.05 (1.00)	2.54 (.90)	2.05 (.82)	2.47 (.87)
8	2.34 (.98)	2.32 (1.00)	2.53 (1.01)	**2.03 (.82)**
9	2.25 (.82)	2.84 (1.03)	**2.00 (.93)**	**1.93 (.78)**
10		3.12 (1.03)	**2.04 (.86)**	
11		2.30 (.88)	2.30 (1.13)	
12		**2.04 (.85)**	2.47 (1.17)	

Key: 1 = necessary or essential
2 = very important
3 = important
4 = slightly important
5 = not important

Bold = Top ranked items in CISR

N = 183

Table 3

Means and standard deviations of responses to each item in subscales in the Course Effort Survey Revised (CESR) *by students enrolled in college courses or workshops*

Sequence Number	Attention	Relevance	Confidence	Satisfaction
1	**1.96 (.92)**	**1.90 (.84)**	2.42(.99)	2.38(1.01)
2	2.30(.87)	2.25(.89)	2.73(1.05)	**1.92 (.85)**
3	2.36(.85)	**1.91 (.82)**	2.94(1.13)	2.32(1.07)
4	2.59(1.04)	2.90(1.04)	**2.07 (1.10)**	2.13(.89)
5	2.91(1.12)	3.01(1.12)	2.49(1.03)	3.10(1.10)
6	2.28(.80)	2.52(.97)	**1.79 (.86)**	2.51(1.02)
7	3.26(1.06)	2.74(1.16)	2.09(1.01)	2.47(1.04)
8	2.71(1.06)	2.26(.96)	2.58(1.14)	**2.04 (.85)**
9	2.45(.96)	3.05(1.05)	**2.05 (.89)**	2.09(.88)
10		3.23(1.14)	2.29(1.05)	
11		2.35(.92)	2.52(1.15)	
12		2.13(.94)	2.63(1.17)	

Key: 1 = necessary or essential
2 = very important
3 = important
4 = slightly important
5 = not important

Bold = Top ranked items in CESR

N = 183

Table 4

Means and standard deviations of responses to each item in subscales in the Course Interest Survey Revised (CISR) *by students enrolled in adult community workshops*

Sequence Number	Attention	Relevance	Confidence	Satisfaction
1	1.59 (.66)	**1.29 (.80)**	1.35 (.52)	**1.22 (.42)**
2	1.33 (.49)	1.62 (62)	**1.29 (.46)**	1.31 (.51)
3	1.31 (.49)	2.03 (.53)	**1.28 (.47)**	1.97 (.65)
4	1.31 (.52)	1.78 (.78)	**1.26 (.47)**	2.10 (.44)
5	1.42 (.64)	1.57 (.62)	**1.25 (.64)**	1.91 (.54)
6	2.08 (.46)	1.46 (.59)	1.97 (.51)	1.95 (.55)
7	2.61 (.80)	1.42 (.60)	2.10 (.47)	2.08 (.57)
8	1.99 (.56)	1.41 (.53)	1.45 (.58)	1.87 (.62)
9	1.37 (.60)	2.13 (.71)	1.72 (.61)	1.35 (.49)
10		2.42 (.89)	**1.25 (.45)**	
11		**1.23 (.42)**	1.64 (.70)	
12		**1.28 (.51)**	1.63 (.72)	

Key: 1 = necessary or essential
2 = very important
3 = important
4 = slightly important
5 = not important

Bold = Top ranked items in CISR

N = 147

Table 5

Items arranged and ranked by weightings in the top factors of the CESR *by students enrolled in college courses or workshops*

==========

Factor 1 (Confidence)

C8	Helps me to believe I can succeed if I try hard enough
C3	Builds my self-esteem
C2	Makes me feel I have the ability to succeed
S7	Get enough recognition for my work through feedback.
C1	Helps me feel confident that I can do well
S5	Helps me to accomplish my own personal goals
C9	Get enough timely feedback to know how well I am doing
C12	Designed so that everyone can succeed

Factor 2 (Relevance)

R12	Personally benefit from what I learn in the class
R3	Benefit from the knowledge acquired in the class
S9	Feel satisfied with what I learn
R1	Information I learn will be useful to me
R8	Challenge level is about right
R2	Allows time for practical application of the content
R7	Personal benefits of the course are made clear to me

Factor 3 (Attention)

C10	Instructor models and demonstrates proper skills
A8	Challenge level is about right
A3	Makes the subject matter seem important
A5	Uses humor during instruction
R5	Positive role models be presented to me in class
A9	Curiosity is often stimulated

Factor 4 (Satisfaction)

S3	Recognition I receive is fair
S8	Amount of work I have to do is appropriate
S7	Get enough recognition for my work through feedback
S4	Instructor's evaluations of my work match how well I think I have done
S6	Feel satisfied with how the class is run

Factor 5

R9	Have some input or choice in content and assignments
R10	Get a chance to work with other people in the class
S6	Feel satisfied with how the class is run

Table 6

Items (with satisfaction items removed) arranged and ranked by weightings in the top factors of the CISR *by students enrolled in college courses or workshops*

==========

Factor 1 (Confidence)

C3 Builds my self-esteem
C8 Helps me to believe I can succeed if I try hard enough
C1 Helps me feel confident that I can do well
C2 Makes me feel I have the ability to succeed

Factor 2 (Relevance)

R3 Benefit from the knowledge acquired in the class
R1 Information I learn will be useful to me
R12 Personally benefit from what I learn in the class
R8 Challenge level is about right

Factor 3 (Attention)

A3 Makes the subject matter seem important
A2 Content captures my attention
A1 Makes me feel enthusiastic about subject
C2 Makes me feel I have the ability to succeed

Factor 4 (Success & Relevance)

C6 Requirements for success are made clear to me
C7 Frequent opportunities to succeed
R9 Have some input or choice in content and assignments
R7 Personal benefits of the course are made clear to me

Factor 5 (Fun)

A5 Uses humor during instruction
A7 Does unusual or surprising things that are interesting
C5 Creates a relaxed classroom atmosphere

Factor 6 (Curiosity)

A6 Makes me feel curious about the subject matter
A9 Curiosity is often stimulated

Factor 7 (Support)

C12 Designed so that everyone can succeed
C11 Non-threatening
C10 Instructor models and demonstrates proper skills

Factor 8 (Active)

R10 Get a chance to work with other people
R4 Actively participate in the class

Table 7

Items (with satisfaction items removed) arranged and ranked by weightings in the top factors of the CISR *by students enrolled in adult community workshops*

==========

Factor 1 (Confidence)

C4 Whether or not I succeed is up to me
C2 Makes me feel I have the ability to succeed
C1 Helps me feel confident that I can do well
A4 Shows how the content relates to things I already know
C3 Builds my self-esteem

Factor 2 (Relevance plus)

R7 Personal benefits of the course are made clear to me
A9 Curiosity is often stimulated
C8 Helps me to believe I can succeed if I try hard enough
R8 Challenge level is about right

Factor 3 (Relaxed)

C11 Non-threatening
C12 Designed so that everyone can succeed

Factor 4

C10 Instructor models and demonstrates proper skills
R11 Content relates to my expectations and goals
A8 Uses an interesting variety of teaching techniques

Factor 5 (Success)

C6 Requirements for success are made clear to me
C7 Frequent opportunities to succeed

Factor 6

R10 Get a chance to work with other people
A7 Does unusual or surprising things that are interesting

Factor 7

R2 Allows time for practical application of the content
A6 Makes me feel curious about the subject matter